

# ASTRO<sup>®</sup>25 Data Solutions for Public Safety

Help first responders work faster, safer and smarter...  
and expect more from your investment in wireless communications



# Make the most of your ASTRO®25 network with a wide selection of data applications for public safety.

Law enforcement, fire, EMS and other agencies deal with limited budgets, heightened security concerns, increased public scrutiny and the ever-present mandate to serve and protect. To succeed at this difficult job, first responders need the best tools available. It's time to expect more from your wireless communications.

Today's leaders see voice radio as a critical lifeline and also as a foundation for expanded functionality. Motorola offers a wide selection of applications that build on existing ASTRO 25 network infrastructure to supplement voice capabilities, reduce costs, and empower users with new ways to access and share information. With better information, your personnel can make better decisions and ultimately achieve better outcomes for their departments and the communities they serve.



*Deliver information in a wide range of formats—including voice, text, location—into the hands of first responders so they can make informed decisions anywhere, any time.*



*Motorola is committed to narrowband data networks with over 140 ASTRO 25 IV&D or HPD networks sold, our customers understand the importance that data is playing in today's mission critical communications.*

## ***A powerful resource becomes even more powerful with the addition of data***

Your ASTRO 25 network delivers mission critical performance. Flexible and scalable, it grows with the needs of your department. It was designed as if lives depend on it—because they do. Now you can make that same investment work harder.

### ***Enhance voice communications***

Motorola's data applications can significantly enhance your voice communications:

- Reduce the time and costs associated with programming your radios.
- Track the location of radio users and vehicles so dispatchers can deploy nearby units for faster emergency response – and so personnel who need assistance can be located immediately.
- Send text messages to users who need to communicate silently or obtain detailed information they would otherwise have to write down, such as street addresses and apartment numbers.

## ***Add mobile data capabilities***

Public safety departments around the world are recognizing that mobile data can enhance safety and provide efficient operations. It allows users to:

- Access intranet databases and departmental records from any location so that users can get the information they need, when and where they need it most.
- Send emails and attachments among dispatchers, commanders, and front-line personnel.
- File “paperwork” from the field, allowing personnel to spend less time at their desks and more time on the streets.
- Access information on the intranet.

The ability to run a license plate... file a report... see a map... view fingerprints and ID photos... from any location at any time is a transformative capability that promotes greater situational awareness, faster response times, streamlined procedures, and effective deployment of resources. Officers who access information en route know what to expect before arriving at the scene, helping them prepare a safe and effective response.

### ***Position for the future***

As your organization grows and faces new challenges, you will need data capability to expand network functionality. Motorola's ASTRO 25 data solutions lay the groundwork for adding more capabilities at your own pace and as new applications are introduced.

# Choose the right data network for your needs

Enabling data on your ASTRO 25 network is a smooth add-on that takes advantage of your existing network sites, equipment and radio spectrum. When you add data, you are deploying data service over the same coverage area as your voice network.



### Reliability & Availability When Needed.

*ASTRO 25 provides choices for mission critical users who rely on their networks for emergency response. ASTRO 25 IV&D and HPD networks means users can implement data applications that maximize their needs in times of crisis unlike public carrier networks which are available to all users. Applications such as POP25 allows users to re-program radios over the air to implement targeted response teams.*

## Two ways to build the foundation

The ASTRO 25 platform supports two data architectures: ASTRO 25 Integrated Data and HPD. Most customers begin with voice but can quickly add to data starting with Integrated Data, and then add the more powerful HPD dedicated data when they need faster data speeds to support more data-intensive applications. The Integrated Data and HPD networks share the same core equipment, site locations, backhaul, and personnel to manage and maintain the system. An ASTRO 25 network can be installed and then an HPD overlay can be added or the ASTRO 25 HPD system can be installed first and then the Project 25 voice and data capability can be added.

### ASTRO 25 Integrated Voice & Data (IV&D)

The IV&D network is a cost-effective way to simplify administrative tasks and put more applications beyond voice communications into the hands of radio users. With an existing ASTRO 25 voice system, adding Integrated Data is simple and can provide a host of additional high-value applications including fire station alerts, location and text messaging.

IV&D works with the ASTRO 25 portable and mobile family of radios. It enables users to share data such as text messages with each other. There is no need to purchase specialized end-user equipment.

It coexists with voice traffic over the same radio frequencies you're already using. The system dynamically reallocates channels to voice or data in real time as user demand requires, thus maximizing your use of available channels. IV&D always gives

priority to voice over data so that data transmissions will not interfere with voice calls.

ASTRO 25 provides an option to add encryption to integrated data, providing the same security level as voice networks.

### HPD

HPD introduces higher bandwidth to support a portfolio of mobile data applications that run on vehicle-mounted computers. HPD uses dedicated channels for data applications to provide maximum data capacity without compromising your voice system. With HPD and the right applications, users in the field can directly access databases (including warrants, arrest records, and DMV records). They can display photographs, blueprints and other graphic images. They can also capture fingerprints, access an intranet database and match them using a mobile ID application.

### Multi-Net Mobility Ties Data Networks Together

For the ultimate flexibility in network design, users can receive uninterrupted data coverage as they move between different data networks. Multi-Net Mobility™ works across a wide range of networks including ASTRO 25 IV&D, HPD, MOTOMESH™, as well as public carrier networks. It establishes a Mobile Virtual Private Network (MVPN) for a transport and platform independent solution that maintains encrypted data sessions as a user roams between multiple networks.

## Application Support

Data Architecture	Channel Size	Frequency Bands	Applications
ASTRO 25 Integrated Voice & Data	12.5 kHz	VHF UHF 700/800MHZ	Text Messaging Location Tracking & Motorola MARVLIS™ Resource Analysis Fire Station Alerting POP25 Over the Air Radio Programming Encryption & Over The Air Rekeying (OTAR)  Third-party Application Program Interface (API)
ASTRO 25 HPD	25 kHz	700/800MHZ	PremierOne™ mobile applications Premier One CSR Messaging Location Tracking Third-party integrated via application program interface (API): Web based browsing – internet/extranet Photos, maps, still images Fingerprints & mug shots Field reporting, vehicle location, CAD dispatch Filing administrative reports from the field

# Intelligence on the Front Lines

On the scene, on the streets... where the action is... your field personnel need good information to make good decisions. Give them the tools to obtain and share data, maintain situational awareness, conduct investigations, anticipate events, reduce administrative overhead, minimize response times and work with maximum impact to serve and protect.



*Text Messaging*  
APX radio with a text message request.

## Text Messaging

ASTRO 25 Text Messaging Service (TMS) helps to provide law enforcement and public safety personnel with real-time secured remote access to mission critical data. Silent and reliable, text messaging is an ideal form of alternative communication when sensitive information is being shared or when the environment is too noisy for conversation. Text requires fewer system resources, making it a good option when major incidents generate high-volume radio traffic. Text also conveys detailed information in a convenient form that allows recipients to refer back without having to write down or record the message for later reference.

### Reliable, optimized and secure messaging –

Motorola's text messaging application allows users equipped with Motorola Project 25 portable and mobile equipment to:

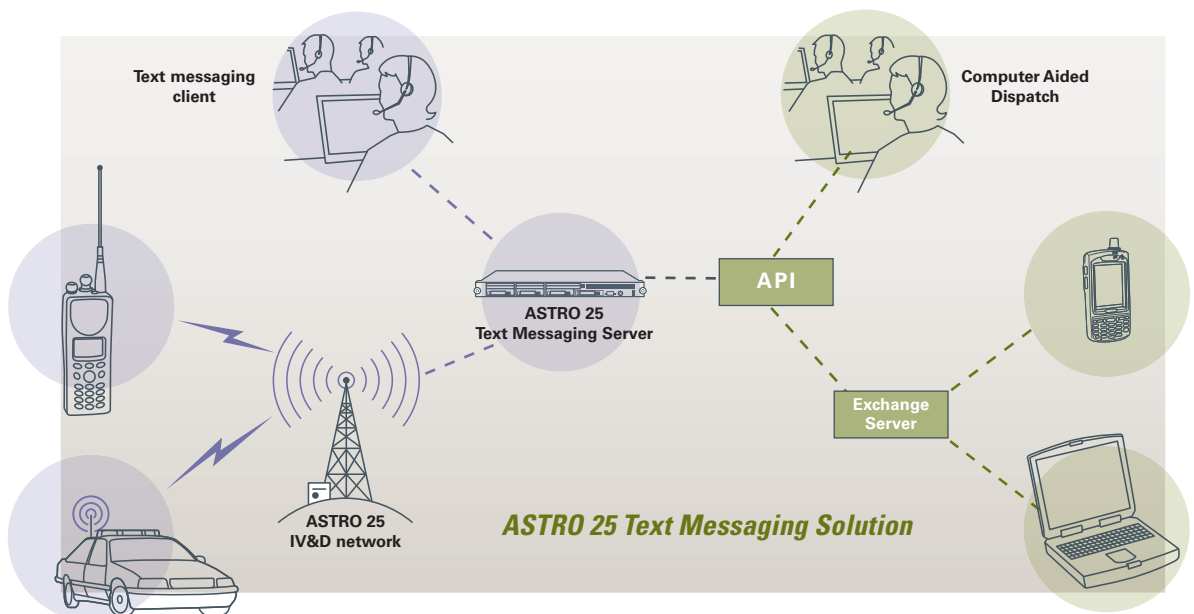
- Send and receive text messages with other subscribers and dispatch operators.
- Broadcast text messages to a group of radio users.
- Select from a list of pre-defined messages to quickly compose or respond to messages.
- Store incoming, draft and sent messages for later referral.
- Query data bases for critical information such as license plate look-ups.

### Operational efficiency via a rich set of feature rich applications –

Besides text messaging, TMS uses open APIs to allow custom integration with a rich set of enterprise applications and services, such as database query, emergency alert, Be-on-the-lookout (BOLO) alerts, and incident dispatch.

### Flexible text messaging –

TMS provides a digital IP-based unified messaging service between radios, wireless mobile data terminals, dispatch consoles, PDA clients, and mobile phones using the customer's current exchange servers plus the Motorola text messaging API.





*XTS5000 radio with GPS microphone*

### Location of Users and Vehicles

Knowing the whereabouts of your personnel is essential for deploying them effectively and keeping them safe. The ASTRO 25 Outdoor Location Solution provides location data in real time with pinpoint accuracy. It works with Global Positioning System (GPS) devices connected to ASTRO 25 mobile and portable radios. Several update methods keep dispatchers informed of the radios' current locations:

- During day-to-day operations, automatic location updates are sent periodically or by distance traveled. Customizable settings fine-tune the system so that dispatchers have current information without tying up valuable network bandwidth with unnecessary reports. For example, fire trucks parked at the station won't send location updates until they move out on a call.
- Dispatchers can manually update the location of any unit at any time, confirming the presence and position of field personnel without requiring voice call-ins, thus saving time and reducing radio congestion.
- Location can be programmed so when the emergency button is pressed location information is automatically sent.
- For end users, information about the current location (latitude, longitude, time and date) appears on the radio display or in a third party mapping application on a mobile data terminal. An Application Program Interface (API) interfaces the GPS data into the customer's third-party applications.

### Motorola MARVLIS Resource Analysis

Immediate decisions about which car to dispatch—and long-term planning about deployment—both require extensive information.

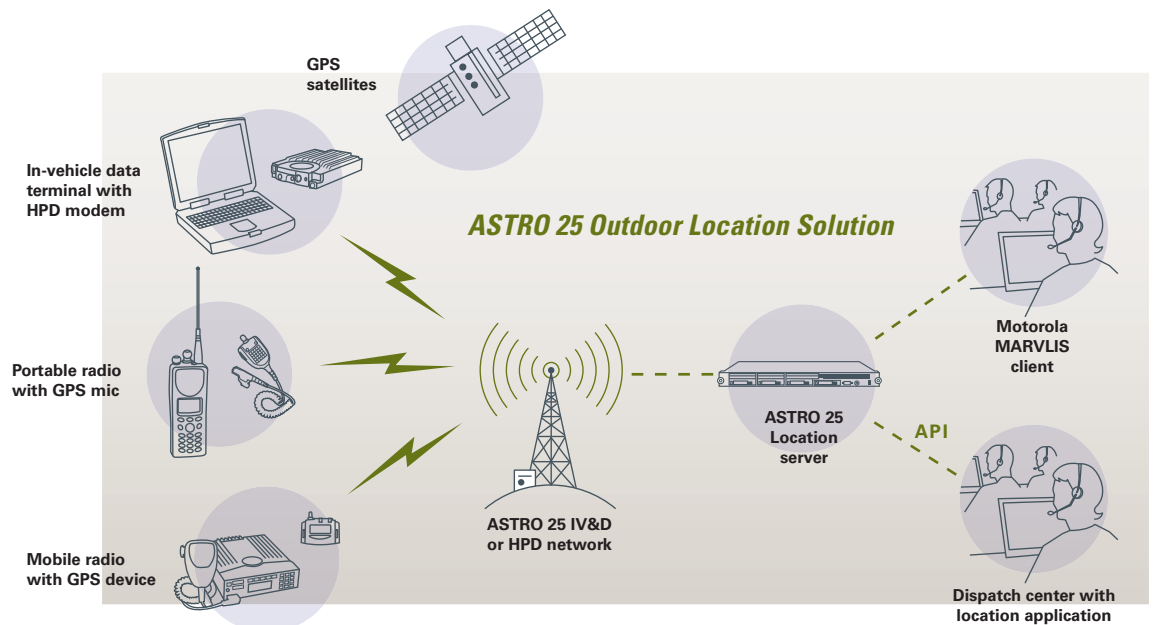
Leveraging the ASTRO 25 outdoor location solution, MARVLIS can analyze current and historical location data to achieve efficiencies in getting the right resources to the right locations at the right time.



*MARVLIS Supervisor Mode provides a bird's-eye-view of current operations*

Intelligent routing, a live graphic display of current and required resources, and on-demand innovative analysis are some of the available tools.

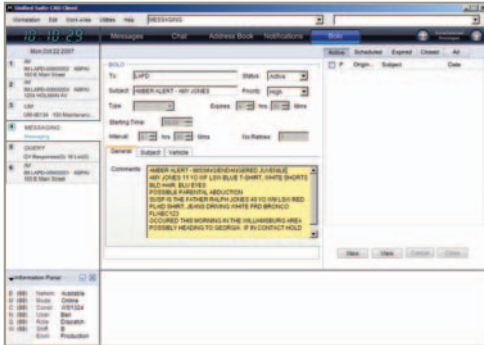
- Deployment Monitor integrates with GPS and CAD systems to generate a map showing the current location of every resource. A glance at the map shows dispatchers which resources are available to respond to a call.
- Impedance Monitor tracks GPS data as your vehicles perform their daily duties, determining how varying road and traffic conditions affect travel times by time-of-day and day-of-week. Based on historical data, it adjusts routing recommendations to reflect daily and seasonal changes in traffic patterns.
- Dynamic Demand Monitor provides a historical geographic view of call demand in your jurisdiction.



*The ASTRO 25 Outdoor Location Solution tracks the location of every GPS-equipped mobile and portable radio unit.*

## Mobile Data

Situational awareness starts with keeping your eyes and ears open. But in today's world, first responders need to know more. Give them access to all available information via their mobile computers using PremierOne™ Mobile solutions.



### PremierOne Mobile

PremierOne CAD provides information such as Bolo alerts (be-on-the-look out) to the mobile data terminal equipped with the PremierOne mobile application over the ASTRO 25 HPD network.

PremierOne Mobile gives field personnel access to real-time data from Computer Aided Dispatch (CAD), Records Management Systems (RMS) and other public safety and service applications, including local, state and federal databases.

- Advanced mapping capabilities provide incident updates and visual overview of available resources.
- Multimedia files such as photos, maps and video can be included in incident records and messages.

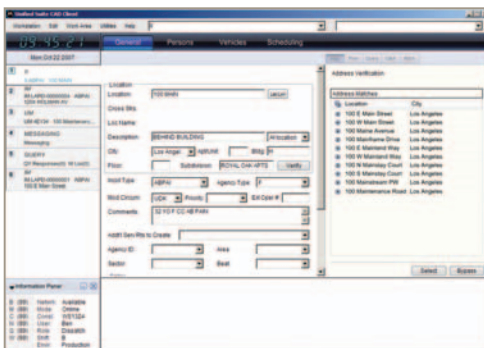
- Be-on-the-lookout (BOLO) database provides alerts to users and enables automatic person and vehicle queries.
- Priority calls, “hot hit” responses, messages and alerts can be presented as information bubbles, audible signals and visual warnings to alert users who are busy doing their jobs.
- Personnel can file routine “paperwork” from their vehicles without returning to the station house, so they spend less time at their desks and more time on the street.

Real-time alerts notify users of situational changes such as location updates and suspect information. An intuitive and customizable “smart view” interface is designed to let first responders focus on the mission—not on the technology—to get their jobs done when lives are on the line.

## Robust Data for Dispatch and Command

Give your dispatchers and command centers the tools to work decisively under pressure. These applications enable dispatchers to speed emergency response, deploy resources for maximum results, and provide potentially lifesaving support to your personnel in the field. Command and control software provides the analytical power to recognize trends, maximize effective deployment, and anticipate problems before they strike.

### PremierOne™ CAD Applications



PremierOne CAD gives dispatchers crucial data at a glance

When emergency strikes and the clock is ticking, operators require situational intelligence that is extensive, concise, clearly organized—and immediately available at their fingertips. PremierOne™ CAD (computer-assisted dispatch) answers this need with a GPS-enabled data map and comprehensive access to real-time information.

Built for dependability, availability and hardened disaster survival/recovery,

PremierOne CAD ensures that dispatchers will have the mission-critical tools they need to act swiftly:

- Access relevant information using an easy, intuitive and customizable interface that minimizes training needs, reduces error rates, and helps dispatchers work quickly.
- Gain a real-time view of available resources, current locations and deployment status, community hot spots and unresolved community needs—all to enable more efficient mobilization and allocation of resources.
- Store photographs, video and other multimedia files from an incident record for future reference, investigations and accountability.

Like the other members of the PremierOne family, PremierOne CAD has a fully scalable architecture that will allow your agency to expand the scope and capabilities of the system as your community's public safety needs evolve into the future.

## PremierOne CSR

Non-emergency calls—citizen requests for services and information—are a big part of any agency’s day-to-day operations. Streamline your ability to answer questions and resolve issues with PremierOne™ CSR (Customer Service Request). CSR provides tools to log, track and resolve issues, helping agencies share information and manage tasks within and between departments, all to present more

efficient and responsive service to constituents.

CSR standardizes citizen interactions, dispatches service personnel, manages service calls and coordinates with all responsible agencies across the government enterprise. With a highly configurable workflow engine, CSR automates new and existing processes to save time and money. Service agencies can provide citizens with more accurate information, identify costly duplicate issues, reduce work redundancy, resolve

assignments and map trends to give managers a comprehensive view of the work being done throughout the community.

PremierOne CSR provides citizens with access to government services through various channels including phone, web, email and in person. Operators have fingertip access to an extensive and customizable database to find accurate answers to citizen questions. From first call to resolution, the system helps agencies bring government and citizens together to improve the quality of life in their communities.



Premier one CSR allows 311 centers to dispatch information to work teams for efficient response to non emergency situations.

## Fire Station Alerting

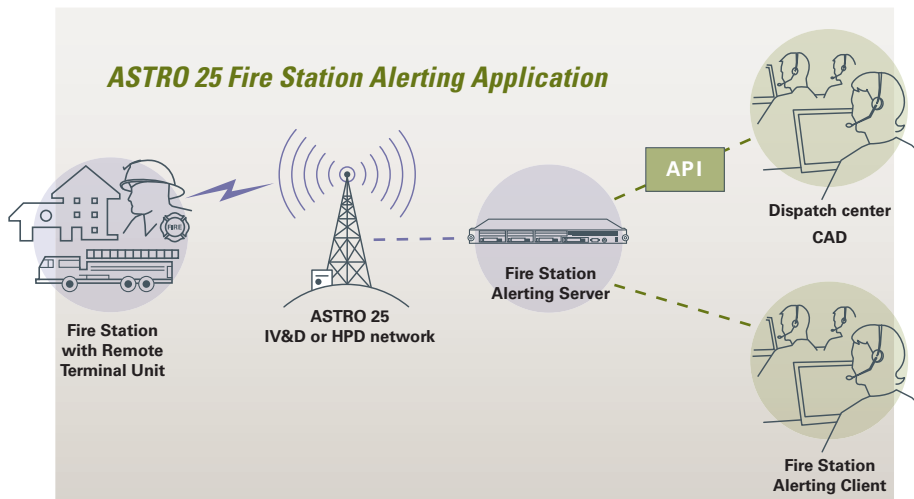
When an emergency requires fire or EMS response, an automated connection between dispatch and the fire house can speed response and potentially save lives. From the initial 9-1-1 call to final dispatch and acknowledgment, Motorola’s FSA4000 system operates over the ASTRO 25 IV&D network ensuring swift and sure communications:

- FSA opens a link to the appropriate station(s) based on the location of the incident and the level of severity as entered by the 9-1-1 operator into the CAD system.
- FSA activates a “heart saver” pre-alert tone at the station and confirms the alert was received.
- FSA opens a voice channel so the operator can speak directly to personnel in the station, while the station’s lights and exhaust fans are activated automatically.
- Once first responders have left the station, FSA allows the dispatcher to close bay doors and secure the building.



Fire Station Alerting streamlines emergency response

FSA continuously monitors stations for intrusion, fire, smoke, electrical power, and FSA4000 equipment operation. This allows dispatchers to keep an eye on the safe condition of the stations, while the fire and EMS crews focus on their jobs as first responders in the community.



# Applications for Network Administration

Keep your radios on the job, not in the shop. Relieve your logistics burden, reduce administrative costs and allow your networks to respond more quickly to changing conditions by automating both routine and emergency updates to your end-user equipment.

## **Programming Over Project 25 (POP25)**

Periodically, customers reprogram their entire fleet of radios to reflect network growth and changes. POP25 automates the process, sending updates quickly and transparently over the air using the ASTRO 25 Integrated Voice & Data network instead of requiring users to bring their radios in for manual reprogramming.

In addition to minimizing administrative costs and logistics issues, POP25 allows you to respond faster to changing conditions, reprogramming your entire fleet in hours or days, instead of the weeks or even months required for a manual update.

It takes about two minutes for POP25 to download changes to each radio. Users can make, receive, and continue calls during the entire process. There's no need to provide loaner equipment because radios are never "in the shop." POP25 handles all of the same configuration parameters that can be programmed manually, including:

- Radio ID
- Talkgroups
- Mode names
- Scanning features
- Call lists
- Conventional channels
- Operating settings (menus, buttons etc.)

Built in security mechanisms such as encryption prevent unauthorized users from programming and eavesdropping. Administrators can store pre-planned configurations, simultaneously queue multiple radios,

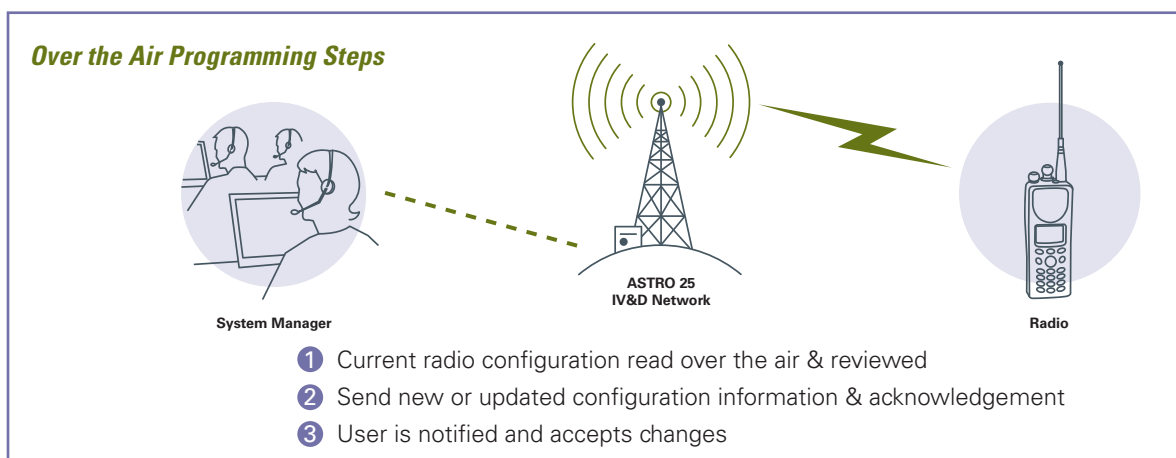
and download information at schedule updates. For larger systems multiple administrations can work in parallel to hasten the programming process.

## **Over the Air Rekeying (OTAR)**

Digital encryption helps to keep your communications secure. OTAR allows system operators to easily and securely change encryption keys on a regular basis, making the keys a moving target and more difficult for adversaries to crack. If one of the radios is lost or stolen, you can flag the system to erase the keys in the compromised radio and quickly change the keys on your entire system to lock out the compromised radio from one centralized location.

OTAR, like POP25, sends updates to radios over the air, so users do not have to bring their radios in for manual service. That's especially important for encryption keys because a manual changeout could take days or weeks to accomplish—meaning lost money and productivity as well as a longer window of vulnerability.

OTAR management applications help you plan, generate, store, track and maintain all of the encryption keys used on your system, giving you more control over communications security.



# Third Party Applications

Motorola works with leading and emerging vendors to encourage the development of new data applications for ASTRO 25 networks. Motorola partners are engaged in ongoing efforts to introduce new solutions that work with ASTRO 25 IV&D and HPD to help you accomplish more with your wireless network.

## ***An Array of Resources at Your Disposal***

Third-party applications are available for a wide range of additional functionality including:

- Browser access to intranet sites, making vital departmental information available in the field through a familiar browser interface.
- Email applications allowing users and dispatchers to send emails and attached files.
- Mobile identification solutions allowing personnel in the field to capture, send, analyze (through AFIS and other databases) and receive photos, fingerprints, sketches, vehicle and license records, warrants, and other data to swiftly ID potential suspects, often before approaching the individual and putting themselves at risk.
- Automatic vehicle location (AVL) systems used at the command center to allow dispatchers, commanders, and other field units to see the current location of every vehicle in the fleet, helping agencies deploy their resources for fastest response.
- Report writing solutions to reduce administrative overhead and make vital information available system wide in the shortest time possible.

## ***Developer's Program***

Motorola's Application Ready program encourages developers to continue creating new applications. Both ASTRO 25 IV&D and HPD are IP-based networks that can host a variety of standardized applications developed by independent software companies and system integrators to help public safety users.

Motorola provides Application Program Interfaces (API) for location and text messaging data, allowing third party developers to easily integrate this data into their applications for transparent sharing of information. The ASTRO 25 APIs make it easy for third part developers to add on specific customer applications while customers continue to enjoy the benefits of an ASTRO 25 mission critical voice network with all of the robust features and reliability need for mission critical communications.

## ***Seamless Mobility Across Multiple Networks***

Wherever they go, field personnel can maintain uninterrupted communications using the highest-speed network service available in each location. Motorola Multi-Net™ Mobility allows seamless roaming across different types of data networks including ASTRO 25 IV&D, HPD, MOTOMESH, and other mesh networks, as well as networks provided by public carriers.

It works like this: an officer in a moving car is downloading Amber Alert photos via an HPD network. As the car drives through a busy neighborhood it comes within range of a localized MOTOMESH wideband hotspot and the connection automatically shifts to the faster service. When the car again moves outside the MOTOMESH range, the connection is picked up again by HPD—all without interruption.

Multi-Net Mobility is packaged with HPD and is also available separately. It establishes a Mobile Virtual Private Network (MVPN): a transport and platform independent solution that maintains a securely encrypted data session (VPN tunnel) as a user roams between subnets or networks. With Multi-Net, you have the flexibility to deploy different types of networks in different places to reflect current and future needs, while your personnel count on having a communications lifeline that works transparently in any location—so they can keep their attention on the mission, not the technology.

Technology that's second nature and an evolutionary path that will get you there... from a vendor who understands the potential of wireless data to yield exciting new capabilities for public safety.

## **MOTOA<sup>4</sup>**<sup>™</sup>

### **MOTOA4 MISSION CRITICAL SOLUTIONS**

Only Motorola enables agencies to confidently take the next step in mission critical communications. Motorola helps agencies move beyond the basics to achieve the most reliable and innovative wireless solutions that help to save lives and protect communities. These technologies are delivered seamlessly into the hands of first responders: simply, reliably, and without distracting them from their mission. This is Technology That's Second Nature<sup>™</sup>.

*For more information about data applications for public safety, the MOTOA4 mission critical portfolio and Motorola's commitment to the public safety industry, please visit our website or contact your Motorola representative.*



[motorola.com/ASTRO25](http://motorola.com/ASTRO25)



**MOTOROLA**

Motorola, Inc.  
1301 E. Algonquin Road  
Schaumburg, Illinois 60196 U.S.A.  
[www.motorola.com/ASTRO25](http://www.motorola.com/ASTRO25)  
1-800-367-2346

The information presented herein is to the best of our knowledge true and accurate. No warranty or guarantee expressed or implied is made regarding the capacity, performance or suitability of any product.

MOTOROLA and the Stylized M Logo are registered in the US Patent & Trademark Office. All other product or service names are the property of their respective owners. © Motorola, Inc. (0903)

RO-99-2176